AMENDMENTS TO THE SPECIFICATION:

Please amend the specification as follows:

Amend the paragraph beginning on page 8, at line 17, as follows:

As stated above, since the spherical aberration correcting optical unit is arranged in the common optical path where both of the first light flux with the first wavelength $\lambda 1$ that is 450 nm or less and the second light flux with the second wavelength $\lambda 2$ pass through, the aforementioned spherical aberration correction can be conducted not only for recording/reproducing of information for high density optical disc ~~by~~ but also for recording/reproducing of information for an optical disc having lower recording density such as DVD and CD. Due to this, recording/reproducing characteristics for optical discs with lower recording density are improved, thus, reliability as an optical pickup device is improved.

Amend the paragraph beginning on page 17, at line 7, as follows:

As an example of incorporating a spherical aberration correcting optical unit and a chromatic aberration correcting optical unit to be the same optical unit, there is an expander lens composed of the positive lens group and negative lens group wherein at least one ~~lend~~ lens group among constituent lens groups is made to be movable in the optical axis direction, and further, either optical surface is made to be a diffracting surface on which a depth of the ring-shaped zonal step is designed as stated above.

Amend the paragraph beginning on page 17, at line 21, as follows:

As another example of incorporating a spherical aberration correcting optical unit and a chromatic aberration correcting optical unit to be the same optical unit, there is a coupling lens wherein at least one ~~lend~~ lens group among constituent lens groups is made to be movable in the optical axis direction, and further, either optical surface is made to be a diffracting surface on which a depth of the ring-shaped zonal step is designed as stated above. When the function as the spherical aberration correcting optical unit and as the chromatic aberration correcting optical element is given to the coupling lens that converts a divergent light flux emitted from the laser light source and leads it to the objective lens unit, the number of optical parts can be reduced greatly, which is extremely effective for downsizing, weight reduction and cost reduction.

Amend the paragraph beginning on page 20, at line 8, as follows:

In the optical pickup device, it is preferable that the objective lens unit ~~and the spherical aberration correcting optical unit~~ conduct tracking ~~solidly~~ together with the spherical aberration correcting optical unit with each other.

Amend the paragraph beginning on page 20, at line 11, as follows:

In the aforementioned structure, when utilizing a liquid crystal element as a spherical aberration correcting optical unit, a wavefront of the light flux entering an

objective lens unit through the spherical aberration correcting optical unit has spherical aberration. In such a case, if an optical axis of the objective lens unit is deviated from that of the spherical aberration correcting optical unit, a coma ~~there~~ is generated ~~coma~~, and excellent tracking characteristics are not obtained. It is therefore preferable to construct the structure so that the objective lens unit may conduct tracking together with the spherical aberration correcting optical unit ~~solidly~~ with each other.

Amend the paragraph beginning on page 35, at line 3, as follows:

FIG. 30 is a diagram showing the results of calculation wherein the axis of abscissas represents amount of step dB in the optical axis direction and the axis of ordinates represents changes in diffraction efficiency of the diffractive structure, and B4 in the diagram represents diffraction efficiency of the 4^{th} order diffracted light of a ~~blue~~ violet light flux having wavelength 405 nm, and R2 represents diffraction efficiency of the 2^{nd} order diffracted light of a red light flux having wavelength 655 nm. Diffraction efficiency of the diffractive optical element is 1.5601 at 405 nm, and it is 1.5407 at 655 nm. It is possible to obtain the diffraction efficiency that is as high as 70% in each wavelength area in the vicinity of ~~blue~~ violet 405 nm used for high density DVD and in the vicinity of 655 nm used for DVD, by establishing amount of step dB to be within a range from 2.65μm to 2.8μm. Further, when diffraction order n1 of diffracted light having the maximum diffraction efficiency is made to be 4 or more, among diffracted rays of light generated when a light flux having a wavelength of ~~blue~~ violet 405 nm enters, ring-shaped zonal width P in the direction perpendicular to the optical axis grows greater.

Therefore, transferability of the diffractive structure in the course of molding is enhanced, high light transmission factor is obtained, and the number of ring-shaped zones in the effective diameter can be small, which reduces time required for processing a die, resulting in reduction of cost for manufacturing diffractive optical elements.

Amend the paragraph beginning on page 78, at line at follows:

In the coupling lens used in the invention, it is preferable that the second wavelength λ2 is a wavelength that is within a range of 600 nm - 700 nm, and a combination of the diffraction orders n1 and n2 is either one of (n1, n2) = (2, 1), (3, 2), (4, 2), (5, 3), (6, 4), ~~(7, 8)~~ (7, 4), (8, 5), (10, 6).

Amend the paragraph beginning on page 111, at line 15, as follows:

Further, when conducting recording/reproducing of information for DVD in the optical pickup device PU1, light-emitting point EP1 is made to emit light. A divergent light flux emitted from the light-emitting point EP1 is reflected on prism PS, and is reflected by polarized beam splitter BS to be transformed into a collimated light flux by collimator lens COL, as its course for a ray of light is shown with broken lines in FIG. 1. After that, a diameter of the light flux is enlarged by expander lens EXP, and then, it is regulated by diaphragm STO and is further regulated by a filter having wavelength-selectivity. Subsequently, the light flux becomes a spot which is formed by objective

lens OBJ on information recording surface RL2 through protective layer PL2 of DVD. The objective lens OBJ conducts focusing and tracking with biaxial actuator ~~AC~~ AC2 arranged around the objective lens. The reflected light flux modulated by information pits on information recording surface RL2 is transmitted again through the objective lens, the diaphragm STO, expander lens EXP and collimator lens COL to become a converged light flux, then, reflected by polarized beam splitter BS to be converged on light-receiving portion DS1 after being reflected twice in prism PS. Thus, information recorded on DVD can be read by the use of output signals of the light-receiving portion DS1.

Amend the paragraph beginning on page 141, at line 21, as follows:

Further, on the objective lens unit OU, there is provided an operation control circuit that controls operations of biaxial actuator ~~AC2~~ AC, though an explanation for the circuit will be omitted here.

Amend the paragraph beginning on page 143, at line 22, as follows:

When conducting recording/reproducing of information for high density optical disc HD in optical pickup device PU5, violet semiconductor laser LD1 is made to emit light, as its course for a ray of light is shown with solid lines in FIG. 6. A divergent light flux emitted from the violet semiconductor laser LD1 passes through beam arranging element SH, thereby, its sectional form is arranged to be a circular form from an oval,

and then, it passes through the first and second polarized beam splitters BS1 and BS2 to be converted into a parallel light flux by the collimator lens COL. Then, it passes through the optical element for correcting chromatic aberration HOE and is regulated by diaphragm STO in terms of a diameter of the light flux to pass through liquid crystal element LCD to become a spot that is formed on information recording surface RL1 by the objective lens OBJ through protective layer PL1 of high density optical disc HD. The objective lens OBJ conducts focusing and tracking with biaxial actuator ~~AC2~~ AC arranged around the objective lens.

Amend the paragraph beginning on page 149, at line 3, as follows:

Optical pick-up unit PU6 comprises laser module LM1 including: the first light emission point EP1 (the first light source) to emit laser beams (the first laser beams) whose wavelength is 405 nm to record/reproduce information on/from a high density optical disc HD, the second light emission point EP2 (the second light source) to emit laser beams (the second laser beams) to record/reproduce information on/from a DVD, whose wavelength is 655 nm, the first light beam detector DS1, which detects reflected laser beams from information recorded layer RL1 of a high density optical disc HD, the second light beam detector DS2, which detects reflected laser beams from information recorded layer RL2 of a DVD and Prism PS, module ~~LM1~~ MD3 for CD including: infrared semiconductor laser LD3 (the third light source) to emit laser beams (the third light beams) whose wave length is 785 nm to record/reproduce information on/from CD and photo-detector PD3, which are integrated, object lens unit OU comprising: object

lens OBJ, aperture limiting element AP for CD, two-axis actuator AC2, diaphragm STO corresponding to numerical aperture 0.85 of high-density optical disc HD and holding member HB, collimator lens unit CU including, polarized beam splitter BS, collimator lens COL and one-axis actuator AC1, and beam forming element SH.

Amend the paragraph beginning on page 153, at line 15, as follows:

An operation control circuit (not shown), which controls movement of 2-axis actuator AC2, is provided with object lens unit OU. A light source-side optical function surface of diffractive lens L1 is divided into first area AREA1 (not shown) corresponding to an area, which is inside of NA2, and second area AREA 2 (not shown) corresponding to an area from NA2 to NA1. And a ~~plural~~ plurality of a ring-shaped ~~zone~~ zones, within which a ladder type structure is formed, is arranged in centered round an optical axis, which is a ladder type diffractive structure DOE, in first area AREA1. A depth "d0" of a step of the ladder type structure formed in each ring-shaped zone within the ladder type diffractive structure DOE formed in first area AREA1 is set by a following formula[[.]]:

$d0 = 2 \times \lambda / (n1-1)$ (μm)

Each ring-shaped zone is divided into 5 (number of partitions N is set to 5). Where λ ~~represent~~ represents a wavelength of laser beams in microns ~~unit~~, which are emitted from ~~blue~~ violet colored semiconductor laser (Where λ1=0.405 μm), n1 represents refractive index of diffractive lens L1 for wavelength λ1~~.~~, (Where n1=1.524694).

Amend the paragraph beginning on page 157, at line 5, as follows:

Diffractive structure HOE is formed on an emitting surface of collimator lens COL to correct chromatic aberration in ~~blue~~ violet colored region of object lens OBJ. As shown in FIG. 24, the depth of a step of a ring-shaped zone in an optical axis direction is designed to obtain lower order number of diffraction order of diffracted light beam whose diffraction efficiency shows maximum efficiency, when the light beams whose wavelength is 655 nm, incident to object lens OBJ than the number of diffraction order of diffracted light beams whose diffraction efficiency shows maximum efficiency, when the light beams whose wavelength is 405 nm. Accordingly, enough diffraction efficiency can be achieved in each wavelength region and correction of chromatic aberration in the wavelength 655 nm region is controlled appropriately.

Amend the paragraph beginning on page 158, at line 10, as follows:

Causes of spherical aberration, which can be corrected by shifting a position of collimator lens COL, are for example, a variation of wavelength of ~~blue~~ violet laser LD1 caused by manufacturing tolerances, a variation of a temperature dependency of refractive index and distribution of a refractive index of object lens OBJ, a focus jump characteristic[[s]] of multiple-layer ~~disc~~ discs such as two-layer discs, or four-layer ~~disc~~ discs, when recording and reproducing multiple-layered discs, and a variation of depth of the protective layer PL1 based on manufacturing ~~tolerance~~ tolerances and ~~variation~~ variations of distribution of the depth etc.

Amend the paragraph beginning on page 159, at line 10, as follows:

A wavelength selection filter WF (not shown) having a wavelength selection for transmittance is provided on an optical surface of aperture limiting element AP. The wavelength selection filter passes all light beams from wavelength λ1 through wavelength λ3 within area NA3, and passes wave length λ1 and wavelength λ2 and ~~cut~~ cuts off the third wavelength λ3 in the area from NA3 to NA1. Accordingly an aperture-limiting corresponding to NA3 can be achieved ~~base~~ based on the wavelength selection characteristics explained above. In addition, it is possible to provide wavelength selection filter WF on the optical functional surface of diffractive lens L1 or that of converging lens L2.

Amend the paragraph beginning on page 160, at line 14, as follows:

Optical pickup unit PU7 comprises light beam source LDU including ~~blue~~ violet semiconductor laser diode LD1 to emit laser beams (the first laser beams) whose wave length is 405 nm to record/reproduce information on/from a high density optical disc HD and red colored semiconductor laser LD2 whose wavelength is 655 nm (the second laser beams) to record/reproduce information on/from a DVD; photo-detector PD used for both a high density optical disc HD and a DVD; module MD3 for a CD including infrared laser diode LD3 whose wavelength is 785 nm, to emit laser beams (the third laser beam) to record/reproduce information on/from a CD and photo-detector PD3 as an integrated unit; object lens unit OU including object lens OBJ, aperture limiting

element AP for CD, two-axis actuator AC2, diaphragm ~~STD~~ STO corresponding to NA 0.85 which is a numerical aperture of a high density optical disc HD and hub member HB; the first diffracting beam splitter BS1; the second diffracting beam splitter BS2; collimator lens COL; expander lens unit ~~EU~~ EP including one-axis actuator AC1 and expander lens EXP including negative lens E1 and positive lens E2; sensor lens SEN; and beam forming element SH.

Amend the paragraph beginning on page 161, at line 12, as follows:

~~Blue~~ Violet laser LD1 in optical pickup unit PU7 emits ~~blue~~ violet laser beams to record/reproduce information on/from a high-density optical disc HD and optical paths of the laser beams are drawn in solid line in FIG. 25. Divergently emitted laser beams from ~~blue~~ violet laser LD1 are formed into parallel laser beams after passing through collimator lens COL and beam splitter BS, after a cross-sectional shape of the laser beams are formed from an ellipse into a circle while the light beams are passing through beam-forming element SH. A diameter of the laser beams passing through expander lens EXP and second polarized beam splitter BS2 is limited by diaphragm STO and focused onto information recorded layer RL1 through protective layer PL1 of a high-density optical disc HD by object lens OBj after passing through aperture limiting element AP.

Amend the paragraph beginning on page 162, at line 13, as follows:

When recording/reproducing information on/from DVD, one-axis actuator AC1 moves negative lens E1 so that an output laser beams from beam expander EPX is formed into parallel laser beams, and a distance between negative lens E1 of expander lens EXP and positive lens E2 is longer than that of distance when recording/reproducing information on/from a high density optical disc HD. After that, an infrared semiconductor laser is activated and emits laser beams as drawn in dotted line in FIG. 25. The laser beams are formed ~~into After~~ so that a cross-sectional shape of laser beams, which are divergently emitted from red-colored laser diode LD2 is changed from an ellipse into a circle while the laser beams are passing through beam-forming element SH. The beams passing through first beam splitter BS and collimator lens COL are formed into slightly divergent light beams and they are changed into parallel laser beams after passing through expander lens EXP. A laser beam spot is formed by object lens OBJ on information recorded layer RL2 through protective layer of a DVD after the laser beams ~~is~~ have passed through second polarized beam splitter BS2 and aperture limiting element AP. Object lens unit OBJ is moved in focusing and tracking ~~direction~~ directions to perform focusing and tracking functions by two-axis actuator AC2 provided adjacent to the object lens.

Amend the paragraph beginning on page 166, at line 16, as follows:

Causes of spherical aberration, which can be corrected by shifting a position of negative lens E1 is for example, a variation of wavelength of ~~blue~~ violet laser LD1 caused by manufacturing tolerances, a variation of a temperature dependency of refractive index and distribution of a refractive index of object lens OBJ, a focus jump characteristic[[s]] of multiple-layer ~~disc~~ discs such as two-layer discs, or four-layer ~~disc~~ discs, when recording and reproducing multiple-layered discs, and a variation of depth of the protective layer PL1 based on manufacturing ~~tolerance~~ tolerances and ~~variation~~ variations of distribution of the depth etc.